

Butler, David

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To: Butler, David
Cc: Hudson, Shannon; Bateman, Andrew; Mike Lavanga; robsmith@mvalaw.com; Castle, Alex; Smith, Heather Shirley; Toni Hawkins
Subject: DEP fuel clause proceeding, Docket No. 2015-1-E - motion to substitute
Attachments: 2015-1-E - DEP SC Fuel - Teresa Wilson Testimony.d.docx

David:

Pursuant to S.C. Code Section 58-3-40(C), Duke Energy Progress ("DEP") moves for a Hearing Officer order allowing Teresa Wilson to substitute for, and adopt the testimony of, witness Joe Miller. In support of the motion DEP would show the following:

- This is a fully settled case and all parties have separately indicated that they have no objection to this motion.
- Attached to this motion is a draft of the testimony of Ms. Wilson that DEP proposes to submit if the motion is granted. The first page and a half provides biographical testimony for Ms. Wilson. The remainder is the same testimony that was submitted for Mr. Miller on May 7, 2015.
- Ms. Wilson reports to Mr. Miller and is fully informed about the matters covered in the testimony and will be able to respond to questions from the Commission about the testimony.
- Due to a scheduling mistake it will be expensive and difficult for Mr. Miller to attend the hearing. DEP and Mr. Miller will be very grateful if the substitution is allowed.

For the foregoing reasons DEP requests an order allowing Teresa Wilson to substitute for witness Miller and to adopt his testimony.

Thank you for your consideration of our request.


Frank



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 **MERITAS** LAW FIRMS WORLDWIDE

**BEFORE THE
PUBLIC SERVICE COMMISSION OF
SOUTH CAROLINA**

DOCKET NO. 2015-1-E

In the Matter of)	DIRECT TESTIMONY OF
Annual Review of Base Rates)	TERESA L. WILSON FOR
for Fuel Costs for)	DUKE ENERGY PROGRESS, INC.
Duke Energy Progress, Inc.)	(Adopting the Pre-Filed Direct
)	Testimony
)	of Joseph A. Miller, Jr.)
)	

1 **Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.**

2 A. My name is Teresa L. Wilson and my business address is 526 South Church Street,
3 Charlotte, North Carolina 28202.

4 **Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?**

5 A. I am General Manager of Business Services for Duke Energy Business Services,
6 LLC ("DEBS"). DEBS is a service company subsidiary of Duke Energy
7 Corporation ("Duke Energy") that provides services to Duke Energy and its
8 subsidiaries, including Duke Energy Progress, Inc. ("DEP" or the "Company") and
9 Duke Energy Carolinas, LLC ("DEC").

10 **Q. PLEASE BRIEFLY DESCRIBE YOUR EDUCATIONAL AND**
11 **PROFESSIONAL BACKGROUND.**

12 A. I graduated from Clemson University with a Bachelor of Science degree in electrical
13 engineering. I also graduated from Meredith College with a Master's in Business
14 Administration. My career began with Duke Energy Progress (d/b/a Carolina Power
15 & Light) in 1997 as a system engineer in Central Engineering. Since that time, I
16 have held various roles of increasing responsibility in the generation engineering,
17 maintenance, and operations areas, including the role of station manager, first at
18 Duke Energy Progress Cape Fear Plant, followed by Duke Energy Progress Sutton
19 Plant and Smith Energy Complex. I became the General Manager of Business
20 Services in 2014.

1 **Q. WHAT ARE YOUR DUTIES AS GENERAL MANAGER OF BUSINESS**
2 **SERVICES?**

3 A. In this role, I am responsible for providing direction and oversight for business
4 services functions that include operational excellence, training and development,
5 performance excellence and workforce strategy for Duke Energy's fleet of fossil and
6 hydroelectric ("hydro" and collectively, "fossil/hydro") facilities.

7 **Q. HAVE YOU TESTIFIED BEFORE THIS COMMISSION IN ANY PRIOR**
8 **PROCEEDINGS?**

9 A. No.

10 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS**
11 **PROCEEDING?**

12 A. I am adopting the testimony of Joseph A. Miller which was pre-filed in this Docket
13 on May 7, 2015. The purpose of my testimony is to (1) describe DEP's fossil/hydro
14 generation portfolio and changes made since the 2014 fuel cost recovery proceeding,
15 as well as those expected in the near term, (2) discuss the performance of DEP's
16 fossil/hydro facilities during the period of March 1, 2014 through February 28, 2015
17 (the "review period"), (3) provide information on significant fossil/hydro outages
18 that occurred during the review period, and (4) provide information concerning
19 environmental compliance efforts.

1 **Q. PLEASE DESCRIBE DEP’S FOSSIL/HYDRO GENERATION**
2 **PORTFOLIO.**

3 A. The Company’s fossil/hydro generation portfolio consists of 9,176¹ megawatts
4 (“MWs”) of generating capacity, made up as follows:

5	Coal-fired ² -	3,334 MWs
6	Combustion Turbines -	2,995 MWs
7	Combined Cycle Turbines -	2,620 MWs
8	Hydro -	227 MWs

9 The 3,334 MWs of coal-fired generation represent three generating stations
10 and a total of seven units. These units are equipped with emission control
11 equipment, including selective catalytic reduction (“SCR”) equipment for removing
12 nitrogen oxides (“NO_x”), flue gas desulfurization (“FGD” or “scrubber”) equipment
13 for removing sulfur dioxide (“SO₂”), and low NO_x burners. This inventory of coal-
14 fired assets with emission control equipment employed enhances DEP’s ability to
15 maintain current environmental compliance and concurrently utilize coal with
16 increased sulfur content – providing flexibility for DEP to procure the best cost
17 options for coal supply.

18 The Company has a total of 36 simple cycle combustion turbine (“CT”)
19 units, the larger 14 of which provide 2,201 MWs, or 73.5% of capacity. These 14
20 units are located at the Asheville, Darlington, Richmond County, and Wayne County
21 facilities, and are equipped with water injection and/or low NO_x burners for NO_x
22 control. The 2,620 MWs shown as “Combined Cycle Turbines” (“CC”) represent

¹ As of 12/31/2014 representing DEP’s ownership share.

² Represents DEP’s 83.83% and 87.06% ownership share respectively for Mayo and Roxboro.

1 four power blocks. The Lee Energy Complex CC power block ("Lee CC") has a
2 configuration of three CTs and one steam turbine. The two Richmond County
3 power blocks located at the Smith Energy Complex consist of two CTs and one
4 steam turbine each. The Sutton Combined Cycle at Sutton Energy Complex
5 ("Sutton CC") consists of two CTs and one steam turbine. Within these four CC
6 power blocks, all nine CTs are equipped with low NO_x burners, SCR equipment,
7 and carbon monoxide volatile organic compound catalysts. The steam turbines do
8 not combust fuel and, therefore, do not require NO_x controls. The Company's hydro
9 fleet consists of 15 units providing approximately 227 MWs of capacity.

10 **Q. WHAT CHANGES HAVE OCCURRED WITHIN THE FOSSIL/HYDRO**
11 **PORTFOLIO SINCE DEP'S 2014 ANNUAL FUEL PROCEEDING?**

12 A. There were no retirements or new generation brought on line during the review
13 period.

14 **Q. ARE OTHER CAPACITY CHANGES POSSIBLE WITHIN DEP'S**
15 **FOSSIL/HYDRO PORTFOLIO IN THE NEXT FEW YEARS?**

16 A. Yes. In February 2014, DEP announced that it has entered discussions with North
17 Carolina Eastern Municipal Power Agency ("NCEMPA") regarding the potential
18 purchase of NCEMPA's portions of Roxboro Unit 4 and Mayo Unit 1. The
19 Company expects the purchase to close by year end. This purchase, if completed,
20 would bring DEP's ownership to 100% of both units and add 208 MWs to DEP's
21 coal-fired portfolio.

22 **Q. WHAT ARE DEP'S OBJECTIVES IN THE OPERATION OF ITS**
23 **FOSSIL/HYDRO FACILITIES?**

1 A. The primary objective of DEP's fossil/hydro generation department is to safely
2 provide reliable and cost-effective electricity to DEP's Carolinas customers. The
3 Company achieves this objective by focusing on a number of key areas. Operations
4 personnel and other station employees are well-trained and execute their
5 responsibilities to the highest standards in accordance with procedures, guidelines,
6 and a standard operating model. Like safety, environmental compliance is a "first
7 principle" and DEP works very hard to achieve high level results.

8 The Company achieves compliance with all applicable environmental
9 regulations and maintains station equipment and systems in a cost-effective manner
10 to ensure reliability. The Company also takes action in a timely manner to
11 implement work plans and projects that enhance the safety and performance of
12 systems, equipment, and personnel, consistent with providing low-cost power
13 options for DEP's customers. Equipment inspection and maintenance outages are
14 generally scheduled during the spring and fall months when electricity demand is
15 reduced due to weather conditions. These outages are well-planned and executed
16 with the primary purpose of preparing the unit for reliable operation until the next
17 planned outage.

18 **Q. HOW MUCH GENERATION DID EACH TYPE OF GENERATING**
19 **FACILITY PROVIDE FOR THE REVIEW PERIOD?**

20 A. For the review period, DEP's total system generation was 66,027,051 megawatt-
21 hours ("MWHs"), of which 36,453,751 MWHs, or approximately 55%, was
22 provided by the fossil/hydro fleet. The breakdown includes 29% contribution from

1 gas facilities, 25% contribution from coal-fired stations, and approximately 1%
2 contribution from hydro facilities.

3 The Company's portfolio includes a diverse mix of units that, along with its
4 nuclear capacity, allow DEP to meet the dynamics of customer load requirements in
5 a logical and cost-effective manner. Additionally, DEP has utilized the Joint
6 Dispatch Agreement ("JDA"), as described further in Company witness Daji's
7 testimony, which allows generating resources for DEP and DEC to be dispatched as
8 a single system to enhance dispatching at the lowest possible cost. The cost and
9 operational characteristics of each unit generally determine the type of customer load
10 situation (e.g., base and peak load requirements) that a unit would be called upon or
11 dispatched to support.

12 **Q. HOW DID DEP COST EFFECTIVELY DISPATCH THE DIVERSE MIX OF**
13 **GENERATING UNITS DURING THE REVIEW PERIOD?**

14 A. The Company, like other utilities across the U.S., has experienced a change in the
15 dispatch order for each type of generating facility due to favorable economics
16 resulting from the low pricing of natural gas which includes the expansion of shale
17 gas as described in Company witness Daji's testimony. Further, the addition of new
18 combined cycle units within DEP's portfolio in recent years has provided DEP with
19 additional natural gas resources that feature state-of-the-art technology for increased
20 efficiency, fuel flexibility, and significantly reduced emissions. These factors
21 promote the use of natural gas and provide real benefits in both pricing and reduced
22 emissions for customers. Gas fired facilities provided 52% of the DEP Fossil/Hydro
23 generation during the review period.

1 **Q. WHAT WAS THE HEAT RATE FOR DEP'S COAL-FIRED AND**
2 **COMBINED CYCLES UNITS DURING THE REVIEW PERIOD?**

3 A. Heat rate is a measure of the amount of thermal energy needed to generate a given
4 amount of electric energy and is expressed as British thermal units ("Btu") per
5 kilowatt-hour ("kWh"). A low heat rate indicates an efficient fleet that uses less heat
6 energy from fuel to generate electrical energy. Over the review period, the
7 Company's seven coal units produced 46% of the Fossil/Hydro generation, with the
8 average heat rate for the coal-fired units being 10,612 Btu/kWh. This average heat
9 rate represents a 4% improvement in coal unit heat rate over the previous review
10 period. The most active station during this period was Roxboro, providing 76% of
11 the coal production for the fleet with a heat rate of 10,398 Btu/kWh.

12 During the review period, the Company's four combined cycle power blocks
13 produced 49% of the Fossil/Hydro generation, with an average heat rate of 7,059
14 Btu/kWh.

15 **Q. PLEASE DISCUSS THE OPERATIONAL RESULTS FOR DEP'S**
16 **FOSSIL/HYDRO FLEET DURING THE REVIEW PERIOD.**

17 A. The Company's generating units operated efficiently and reliably during the review
18 period. Several key measures are used to evaluate the operational performance
19 depending on the generator type: (1) equivalent availability factor ("EAF"), which
20 refers to the percent of a given time period a facility was available to operate at full
21 power, if needed (EAF is not affected by the manner in which the unit is dispatched
22 or by the system demands; it is impacted, however, by planned and unplanned
23 maintenance (*i.e.*, forced) outage time); (2) equivalent forced outage rate ("EFOR"),

1 which represents the percentage of unit failure (unplanned outage hours and
2 equivalent unplanned derated³ hours); a low EFOR represents fewer unplanned
3 outage and derated hours, which equates to a higher reliability measure; and, (3)
4 starting reliability ("SR"), which represents the percentage of successful starts.

5 The chart below provides operational results categorized by generator type,
6 as well as results from the most recently published North American Electric
7 Reliability Council ("NERC") Generating Unit Statistical Brochure ("NERC
8 Brochure") representing the period 2009 through 2013. The NERC data reported for
9 the coal-fired units represents an average of comparable units based on capacity
10 rating. Overall, DEP metrics were significantly better than the NERC 5 year
11 comparisons.

12 In addition, the DEP fossil/hydro fleet responded to the review period
13 summer and winter peaks with a very strong performance. DEP customers
14 established all time energy usage peak demands during the review period in the
15 months of January and February 2015. On January 8, 2015, the Company
16 experienced a new peak demand record of 14,519 MWh, only to have it broken on
17 February 20, 2015, with a new record demand of 15,569 MWh. Sutton Combined
18 Cycle EAF for January and February 2015 was 100% and the four coal-fired units
19 at Roxboro Station achieved an EAF of 99.7% for the same time period. The
20 Company's coal-fired fleet and combined cycle fleet EAFs during the months of
21 January and February were 96.6% and 99.7%, respectively.

22 The EAF for the peak summer period of June through August is included in
23 the chart for both coal-fired facilities and combined cycles.

<i>Generator Type</i>	Measure	Review Period	2009-2013	Nbr of Units
		Operational Results	NERC Average	
<i>Coal-fired Review Period</i>	EAF	86.0%	83.1%	470
	EFOR	1.9%	7.3%	
<i>2014 Summer Peak</i>	Coal-fired EAF	95.7%	n/a	n/a
	Combined Cycle EAF	99.0%	n/a	n/a
<i>Total CC Average</i>	EAF	90.0 %	85.3%	323
	EFOR	1.1%	6.3%	
<i>Total CT Average</i>	EAF	91.0%	87.9%	934
	SR	97.9%	97.5%	
<i>Hydro</i>	EAF	98.5%	83.7%	1077

Q. PLEASE DISCUSS SIGNIFICANT OUTAGES OCCURRING AT DEP'S FOSSIL/HYDRO FACILITIES DURING THE REVIEW PERIOD.

A. In general, planned maintenance outages for all fossil and hydro units are scheduled for the spring and fall to maximize unit availability during periods of peak demand. Most units had at least one short planned outage during this review period to inspect and maintain plant equipment.

Roxboro station had a planned maintenance outage on Unit 2 in the spring. The Roxboro outage included maintenance work for the boiler, turbine, and scrubber. The more significant projects completed were generator stator and rotor rewinds and boiler superheat and waterwall tube section replacements. In the fall, Mayo Unit 1 entered a planned maintenance outage which involved major inspections on the turbine, generator, and balance of plant systems.

1 Outages for the CT fleet included Asheville Unit 3 in the spring for
2 compressor upgrade and Darlington Unit 13 in the fall to replace exhaust stack.

3 There were also planned outages for turbine inspections at Richmond CC
4 and Lee CC facilities in the fall, which included maintenance activities to ensure
5 reliability of the power blocks.

6 **Q. HOW DOES DEP ENSURE EMISSIONS REDUCTIONS FOR**
7 **ENVIRONMENTAL COMPLIANCE?**

8 A. The Company has installed pollution control equipment on coal-fired units, as well
9 as new generation resources in order to meet various current federal, state, and local
10 reduction requirements for NO_x and SO₂ emissions. The SCR technology that DEP
11 currently operates on the coal-fired units uses ammonia or urea for NO_x removal and
12 the scrubber technology employed uses crushed limestone for SO₂ removal. SCR
13 equipment is also an integral part of the design of the newer CC facilities in which
14 aqueous ammonia (19% solution of NH₃) is introduced for NO_x removal.

15 Overall, the type and quantity of chemicals used to reduce emissions at the
16 plants varies depending on the generation output of the unit, the chemical
17 constituents in the fuel burned, and/or the level of emissions reduction required. The
18 Company is managing the impacts, favorable or unfavorable, as a result of changes
19 to the fuel mix and/or changes in coal burn due to competing fuels and utilization of
20 non-traditional coals. Overall, the goal is to effectively comply with emissions
21 regulations and provide the most efficient total-cost solution for operation of the
22 unit. The Company will continue to leverage new technologies and chemicals to
23 meet both present and future state and federal emission requirements including the

1 upcoming Mercury and Air Toxics Standards (“MATS”) rule. MATS chemicals
2 that DEP may use in the future to reduce emissions include, but may not be limited
3 to, activated carbon, mercury oxidation chemicals, and mercury re-emission
4 prevention chemicals. Company witness McGee provides the cost information for
5 DEP’s chemical use and forecast.

6 **Q. DOES THAT CONCLUDE YOUR PRE-FILED DIRECT TESTIMONY?**

7 **A. Yes, it does.**